

WHAT IS CLAIMED IS:

1. A controller for use with a current-controlled frequency-modulated power factor corrector having a power switch therein,
2 comprising:

4 a sensing circuit configured to detect a sense current
5 representative of an input current to said power factor corrector;
6 and

7 a frequency modulation circuit, coupled to said sensing
8 circuit, configured to provide a signal that causes at least one
9 of:

10 an increase of a switching frequency of said power switch
11 when said input current increases, and

12 a decrease of said switching frequency of said power
13 switch when said input current decreases.

2. The controller as recited in Claim 1 wherein said
2 frequency modulation circuit is configured to cause an increase of
3 said switching frequency of said power switch up to a maximum
4 frequency.

3. The controller as recited in Claim 1 wherein said
2 frequency modulation circuit is configured to cause a decrease of
3 said switching frequency of said power switch down to a minimum
4 frequency.

4. The controller as recited in Claim 1 further comprising
2 a pulse width modulation control circuit, coupled to said frequency
3 modulation circuit, configured to supply a drive signal to said
4 power switch, a frequency of said drive signal being modulated as
5 a function of said signal from said frequency modulation circuit.

5. The controller as recited in Claim 1 wherein said sensing
2 circuit is configured to detect said sense current passing through
3 a sense resistor associated with said power factor corrector.

6. The controller as recited in Claim 1 wherein said sensing
2 circuit comprises an amplifier.

7. The controller as recited in Claim 1 wherein said
2 frequency modulation circuit comprises a filter, a plurality of
3 resistors, a diode and a current-controlled device.

8. A method of regulating a current-controlled frequency-
2 modulated power factor corrector having a power switch, comprising:
3 detecting a sense current representative of an input current
4 to said power factor corrector; and
5 providing a signal that causes at least one of:
6 an increase of a switching frequency of said power switch
7 when said input current increases, and
8 a decrease of said switching frequency of said power
9 switch when said input current decreases.

9. The method as recited in Claim 8 wherein said providing
2 causes an increase of said switching frequency of said power switch
3 up to a maximum frequency.

10. The method as recited in Claim 8 wherein said providing
2 causes a decrease of said switching frequency of said power switch
3 down to a minimum frequency.

11. The method as recited in Claim 8 further comprising
2 supplying a drive signal to said power switch, a frequency of said
3 drive signal being modulated as a function of said signal according
4 to said act of providing.

12. The method as recited in Claim 8 wherein said detecting
2 detects said sense current passing through a sense resistor
3 associated with said power factor corrector.

13. The method as recited in Claim 8 wherein said detecting
2 is performed by a sensing circuit including an amplifier.

14. The method as recited in Claim 8 wherein said providing
2 is performed by a frequency modulation circuit comprising a filter,
3 a plurality of resistors, a diode and a current-controlled device.

15. A current-controlled frequency-modulated power factor
2 corrector having an input that receives an input current at an
3 input voltage and providing an output voltage at an output thereof,
4 comprising:

5 an electromagnetic interference (EMI) filter, coupled to said
6 input, that receives said input current;

7 a rectifier, coupled to said EMI filter, that provides a
8 rectified value of said input current and said input voltage;

9 a converter, coupled to said rectifier, that includes a power
10 switch; and

11 a controller that regulates said output voltage and modulates
12 a switching frequency of said power switch, comprising:

13 a sensing circuit that detects a sense current
14 representative of said input current to said power factor
15 corrector,

16 a frequency modulation circuit, coupled to said sensing
17 circuit, that provides a signal that causes at least one of:

18 an increase of said switching frequency of said
19 power switch when said input current increases, and

20 a decrease of said switching frequency of said power
21 switch when said input current decreases, and

22 a pulse width modulation control circuit, coupled to said
23 sensing circuit and said frequency modulation circuit, that
24 supplies a drive signal to said power switch, a frequency of

25 said drive signal being modulated as a function of said sense
26 current and said signal from said frequency modulation
27 circuit.

16. The power factor corrector as recited in Claim 15 wherein
2 said frequency modulation circuit causes an increase of said
3 switching frequency of said power switch up to a maximum frequency.

17 The power factor corrector as recited in Claim 15 herein
2 said frequency modulation circuit causes a decrease of said
3 switching frequency of said power switch down to a minimum
4 frequency.

18. The power factor corrector as recited in Claim 15 wherein
2 said sensing circuit detects said sense current passing through a
3 sense resistor of said converter and comprises an amplifier.

19. The power factor corrector as recited in Claim 15 wherein
2 said frequency modulation circuit comprises a filter, a plurality
3 of resistors, a diode and a current-controlled device.

20. The power factor corrector as recited in Claim 15 wherein
2 said converter employs a boost converter topology.